City of Buckeye

Intelligent Transportation Systems Strategic Plan

Technical Memorandum #1 and #2 – Stakeholders Group and Workshop Summary

May 2017

Prepared for:

MARICOPA ASSOCIATION of GOVERNMENTS

In partnership with:

BUCKEYE, AZ

Prepared by:

Kimley»Horn

In association with:

ASJ ENGINEERING

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1 INTRODUCTION TO THE ITS STRATEGIC PLAN

The City of Buckeye has received funding from the Maricopa Association of Governments (MAG) to develop an Intelligent Transportation Systems (ITS) Strategic Plan for the City. The goal of an ITS Strategic Plan is to identify strategies and tools to allow the City to manage its transportation network and information exchange more efficiently. ITS includes communications and field technologies that are integrated into the transportation network such as traffic signals, cameras, fiber optic communications, and central management software. ITS technologies are widely deployed throughout the MAG region, the County, and the world, and the City is in a unique position to create a plan for the development of an ITS Program as it continues to grow in both physical size and population.

The project to develop this Plan will include the following phases:

- **Establishing a Stakeholders Group** – identifying City staff and technical staff from other agencies to provide input into the Plan and guide its development.
- **Data Collection** – learn about existing infrastructure, processes, resources, and planned activities within Buckeye.
- **Transportation Systems Management and Operations** – identify City focus areas related to transportation and information sharing such as operation of key corridors, management of events and incidents, and improved freeway coordination. This task will identify resources that will support the City in operations and management for those focus areas.
- **Needs and Strategy Development** – collect needs and challenges related to transportation operations and data/information sharing in the City to guide the development of ITS strategies that could address those needs.
- **Funding and Implementation** – identify methods to help the City implement ITS strategies in a phased manner and obtain the necessary resources and support for continuing operations and management of Buckeye's transportation and communications network.

2 ESTABLISHING A STAKEHOLDERS GROUP

An ITS Strategic Plan and a city ITS program can affect and benefit many facets of a city and many different city departments. Because of this, it is important, as part of this ITS Strategic Plan effort, to make sure that the process of developing the Plan is highly participatory and that the final Plan reflects the priorities of many departments – not exclusively transportation. Having Citywide support for the ITS Plan and the future ITS Program will support the longevity of the Plan as well as maximize the efficiency of the ITS Program and the investments that the City makes as part of it.

There are three stakeholder groups that have been established for this project: The Technical Advisory Group (TAG); the City Stakeholder Group; and the Partner Agency Group. Each group is envisioned to have a different level of responsibility as part of this project, although all stakeholders will be critical players for providing input into the Plan throughout its development.

- The ***TAG*** is made up of City staff and partner agency technical staff to provide oversite during the development of the Plan. City departments represented in the TAG include Engineering, Public Works and Information Technology. Partner agencies represented in the TAG include staff from MAG, Arizona Department of Transportation (ADOT), City of Goodyear and Maricopa County. These partner agency representatives will provide the City with insights and lessons learned from their own experiences related to ITS and the ITS strategic planning process and will help make sure the Buckeye ITS Program aligns with those

of neighboring agencies and the region. The TAG will meet monthly to discuss project progress and will be critical reviewers of all deliverables.

- The ***City Stakeholder Group*** includes representatives from other City departments who are not represented in the TAG. There is significant emphasis, especially at the beginning of the project, to engage with City staff in all departments and explore how an ITS program will affect and benefit them. The Stakeholder Group will be the target audience of two collaborative workshops and some one-on-one conversations and will be invited to participate in review of all deliverables for the project.
- The ***Partner Agency Group*** includes representatives from agencies in the MAG region that can provide Buckeye with guidance and lessons learned as well as technical oversight for parts of the Plan. Some partner agency representatives are included in the TAG, but the partner group is expanded to include other representatives who could be key partners to Buckeye and provide valuable input into the ITS Plan or future ITS Program. The stakeholders in the Partner Agency Group will be the target participants of one collaborative workshop and will be invited to participate in review of deliverables that result from this project.

The complete list of stakeholders, organized by group, is included in **Appendix A**. There are cases where a stakeholder is included in two groups because they have been identified as someone that can provide multiple levels of input into the Plan. The stakeholders list in Appendix A was used to identify participants for the two workshops that are described in this document.

3 INTRODUCTORY WORKSHOPS FOR THE ITS STRATEGIC PLAN

This section provides a summary of the two workshops that were conducted in Task 2 of this project. The *City Stakeholder Workshop* was held on March 16, 2017 and included City staff from various departments in the City of Buckeye. The *Partner Workshop* was held on March 20, 2017 and included Buckeye staff as well as representatives from seven partner agencies within the MAG region.

3.1 City Stakeholder Workshop

The City Stakeholder Workshop was held at Buckeye City Hall and included representatives from various departments throughout the City of Buckeye, including Engineering, Public Works, Information Technology, Community Services/Parks, Communications, Police, and Fire. A list of attendees at this workshop can be found in **Appendix B**.

3.1.1 Workshop Overview

This workshop included an introduction and overview of the ITS Strategic Plan development process as well as an introduction to ITS and Transportation Systems Management and Operations (TSMO). The goal of this workshop was to introduce the City staff to ITS and provide examples of uses and benefits of an ITS Program to garner support for the ITS Strategic Plan effort and, ultimately, Buckeye's future ITS Program. The complete presentation provided at this workshop can be found in **Appendix C**.

At the workshop, all attendees were provided with an *ITS Briefing Document*, provided in **Appendix D**, that was used to supplement the material presented in the workshop. The Briefing Document included additional information such as an overview of ITS infrastructure and planning in Buckeye and the region. It also highlighted key resources and partnerships related to ITS and TSMO in the region.

3.1.2 Summary of Discussions

The City Stakeholder Workshop focused mostly on presenting information to the City Stakeholders to provide them with context and foundational knowledge going into the ITS Strategic Plan effort. However, there were discussions throughout the workshop where City staff provided information about the City and its current infrastructure and processes. This information was captured and will be included in Technical Memorandum #3 – Data Collection.

3.2 Partner Workshop

The Partner Workshop was held at Buckeye City Hall and included representatives from various departments at the City of Buckeye as well as representatives from other agencies in the region, including ADOT, Maricopa County, City of Surprise, City of Avondale, City of Glendale, MAG and Federal Highway Administration (FHWA). One of the partner agency representatives had many years of previous experience at the City of Scottsdale and was able to provide insights about that program as well. A list of attendees at this workshop can be found in **Appendix E**. The goal of this workshop was to provide a forum for the Buckeye stakeholders to learn and receive guidance from these partner agencies about establishing and ITS Program and developing and ITS Plan.

3.2.1 Introduction to the Partner Agencies

At the partner workshop, each partner agency representative was asked to provide an overview of their agency's ITS program. The following are summaries of each partner's response.

City of Surprise

The City has one ITS staff and two signal techs for operation and maintenance of ITS equipment and systems. Surprise has a network of about 50 traffic signals of which more than 90% are connected to a central signal system via fiber (80% of the communications network) and wireless radios (20%); they noted that they have good success with wireless communications in areas where there is no fiber. The City intends to install the last portion of its fiber trunk by the end of the year.

The Surprise TMC is in the public safety building and is co-located with the emergency operations center (EOC), although there is no physical communication link between the EOC and the TMC. There is currently one staff member who is at the TMC about 40% of the time; otherwise, all traffic management functions are done remotely though a laptop and VPN connection.

Glendale

The City of Glendale has 200 traffic signals with 165 of them having communications connection to their central signal system via fiber and wireless communications infrastructure. They also have 14 dynamic message signs, 140 closed-circuit television cameras, and detection throughout the City. The network is largely connected via fiber, and the City is hoping to ultimately convert all major corridors that currently use wireless to using fiber. The City ITS staff include 3.5 staff, made up of an ITS supervisor and 2 techs, with part time help from another staff member. The ITS staff are part of the Transportation Services Management (TSM) group, which include both signal and ITS staff as well as those related to maintenance and traffic control.

The Glendale TMC operates with a primary focus of managing traffic at major special events in the City, which include around 40 events per year, mostly at the University of Phoenix Stadium and Westgate Entertainment District. The ITS group has a very good working relationship with the City police and fire departments to help with special event management and in day-to-day operations of the transportation system. Police or fire may call the ITS staff into the TMC to support the management of an event as needed.

Avondale

The City of Avondale does not have a specific ITS group, but instead has an ITS point person who works alongside of the City traffic engineer and other operations staff at the City. There are currently 52 traffic signals in Avondale, and 9 of these signals are currently connected to a central signal system via fiber, with another 7 coming online within the year. The City has a TMC, but it is in the very early stages of getting up and running. The TMC is currently not staffed regularly and the transportation network is not consistently managed in real-time at this point. There is a project to get Dysart Road, the City's major corridor in relation to traffic, connected to the central signal system, and once this corridor is connected, the City plans to implement daily management of traffic from the TMC for this corridor and others that are connected.

Scottsdale

Scottsdale uses the Transcore central signal system and has 90% of their traffic signals connected to the central system through a mixture of fiber and wireless radios. Scottsdale currently has 30 DMS deployed in the field, but none of the DMS are connected to the central system due to technical issues when they opened their new TMC a few years ago. The Scottsdale TMC is staffed between 6am and 6pm on business days, and there are remote capabilities to assist after-hours, as needed. In addition to the TMC operators, a police liaison will work out of the TMC to provide support during incidents and special events in the City. The police liaisons in the TMC are trained to be able to change intersection signal timing during incidents or events based on a pre-defined set of timing plans.

Scottsdale has a robust set of integrated corridor management (ICM) plans in coordination with ADOT and MCDOT, which are intended to be activated during freeway incidents when freeway traffic is rerouted onto local arterials. There are specific detour routes identified as well as plans for traffic control and signal timing to support the detour. One major part of the ICM plans are the notification procedures that are identified to support improved notification and coordination between agencies.

Maricopa County

The Maricopa County Department of Transportation (MCDOT) owns and operates roadways and signals throughout the County. The MCDOT TMC's most prominent ITS-related functions involve supporting regional transportation operations for data aggregation, analysis and dissemination. They also support efforts to improve incident management and inter-agency cooperation throughout the region. MCDOT has a TMC that is staffed by 2 operators, a traffic signal analyst, a traffic signal technician, an ITS specialist and a TMC manager. The MCDOT TMC has the capability to provide 24/7 response to incidents, as the MCDOT Regional Emergency Action Coordinating Team (REACT) team is on call 24/7 to provide in-field support and remote operations support from the TMC for arterial incidents.

The Regional Archived Data System (RADS) is housed between MCDOT and ADOT and is a centralized repository that supports sharing of data between agencies and the dissemination of traveler information in the region. The MCDOT TMC has access to the region's 911 dispatch center data from both the Mesa and Phoenix dispatch centers, incident data from the Department of Public Safety (DPS), and construction closure information from 10 local agencies in the region. The MCDOT TMC helps disseminate this information to the public, the media and local agencies through outlets including posting to social media, providing information into the state 511 phone system and website, and populating the AZTech Regional Information System (ARIS). ARIS provides personalized alerts to local agency subscribers when an incident is detected within the agencies designated area of interest.

MCDOT, along with ADOT, hosts the AZTech partnership, which is an operational collaborative in the region that has a variety of committees and working groups to support the advancement of ITS and enhanced operational strategies in the region. The Executive Committee includes management-level staff from partner agencies to provide oversight, approve any formal actions proposed by the other committees and provide leadership in

promoting ITS and Operations in partner agencies. The Strategic Steering Committee is a liaison between the Executive Committee and the other committees and working groups and focuses on facilitating implementation of AZTech projects and strategic priorities. The Operations Committee is a forum for agency operations staff to coordinate on operations strategies, technologies and regional standards related to operations and transportation management. The Operators Working Group targets TMC operators and staff whose role is at an agency TMC. The TIM Coalition focuses on those involved with incident response and management and strategies to improve responder coordination and safety in the region. AZTech is in the process of establishing a PIO group to provide a forum for those focused on providing public information related to transportation in the region.

Arizona Department of Transportation

ADOT has the only 24/7 TOC in the region which has at least 4 people in the control room at all times helping to monitor and manage traffic on the ADOT statewide network. In addition to the operators, there are workstations for an ADOT PIO and a DPS trooper to co-locate in the TOC during specific hours. The PIO disseminates real-time traveler information from the TOC to improve the frequency and consistency of information provided to the public. The DPS trooper works alongside the operators and has full use of the CCTV cameras in the control room, and they collaborate to determine the type of resources needed to address an incident. This program has increased operational efficiency for both agencies and helped reduce response time and clearance time for incidents on freeways. A 2016 study showed a 54 minute reduction in roadway clearance time for all crashes since DPS began to co-locate at the TOC is 2014.

All of the ADOT traffic signals within the Phoenix metro area are connected to the TransSuite central system. Not all traffic signals in rural areas of the state (outside of the Phoenix area) are currently connected to a central system, and for those more rural signals, ADOT uses MaxView as the central system because it provides better remote capabilities for statewide needs. Additionally, there are instances where local agencies have taken ownership of interchange signals and control them from their TMCs via their local central signal system.

ADOT is looking to develop ICM plans, similar to the one in Scottsdale, to improve arterial-freeway coordination throughout the region. These plans will be important to better manage traffic on the freeway and the adjacent arterial detour routes in response to major freeway incidents, construction or event traffic.

Federal Highways Administration

FHWA plays an important role related to supporting agencies in ITS and operations through providing resources and opportunities. Examples include facilitating peer exchanges or organizing best practices or scanning tours, as well as providing guidance on funding opportunities and federal standards for ITS projects using federal funding.

3.2.2 Partner Recommendations for Buckeye

This section summarizes the lessons learned and recommendations communicated by the partner agency representatives to City of Buckeye representatives related to developing and ITS Program as well as developing their ITS Plan.

Recommendations about Traffic Management and a Future TMC

- The most important thing that Buckeye can do is use the opportunity to operate their transportation system better. This should start with providing communications to existing signals and connecting them to a central management system.
    - The servers for a central management system would require a designated space, but the ability to interface with and operate the system does not require a physical facility and can be done on a laptop, tablet or phone.

    - Buckeye is already working on getting an RCN connection, which will be helpful in achieving centralized management.
- There is a relative threshold for when a physical TMC is needed – it is likely when the City gets 150 to 200 traffic signals.
    - Glendale suggests that their TMC is definitely necessary because of the mega-events that they host at the stadium – they benefit from the ability to co-locate with police and ADOT during these events to make real-time decisions.
    - Glendale has strong coordination with police so that traffic management can be done at the TMC which frees up the officers to take care of more critical things instead of needing to manually change signals at intersections.
        - They suggest that there really is no need for a physical video wall for regular traffic management, as it can be done at a workstation or laptop just as effectively.
        - They emphasized that the more equipment that is deployed, the more responsibility the City has to maintain, upgrade and replace equipment as necessary.
- There is a growing need for 24/7 operations at local agencies, but realistically, cities cannot afford to be 24/7.
    - Buckeye should eventually look to create an agreement/IGA with another agency who can provide after-hours support for operations, such as ADOT or, in the future MCDOT.
    - Currently, Glendale has an agreement with ADOT to manage interchange traffic signals that are owned by Glendale during special events – ADOT can remote into their system and control signals as needed.
- Recommendations for the future when a TMC is warranted:
    - Co-locating a TMC with police is huge benefit to incident response and management, especially to make sure dispatch can see the intersection camera images.
        - Improved clearance times and incident coordination has great return on investment.
    - Having a location for a signal tech in the TMC is helpful. It allows them to use cameras to identify issues with signals without having to be in the field.
- Since Buckeye operates next to a freeway, coordinate with ADOT to develop an ICM plan or process for when there are freeway incidents or closures.
    - The biggest part of this is setting up communications processes between the agencies. For example, when there is a freeway event, who should be notified at the City and at what point.
    - ICM planning should also include identifying specific routes that should be used to detour freeway traffic onto arterials.
        - Having centralized signal management will allow the City to implement traffic management strategies to accommodate traffic these detours when needed.

Recommendations for Staffing and Organization to Support and ITS Program

- It is important to try and get all staff positions who will deal with ITS (planning, maintenance, operations, etc.) under one organizational “roof”.
    - Signals and ITS should never be separated, because one has to work with the other seamlessly.
        - Maintaining detection devices is one of the most important things for ITS – malfunctioning or missing detection is the number one reason for delays and can cost motorists up to $20k a year per detector that is malfunctioning. The people managing the central signal system will be the first to identify or hear about malfunctioning detection, but it is the signal technicians that maintain them, so there must be good coordination between those staff.
        - If it is possible, get a central signal system that can alert staff when and where the detection is failing – this will save a lot of time and money.

- Include barricade group under the ITS umbrella as well as the group that develops or approves traffic control plans.
- Include planning and project management under the ITS umbrella. This helps integrate ITS into the process at the planning level and will help facilitate a bigger-picture planning view so that infrastructure and systems work best as a whole system.
    - This also supports inclusion of ITS in capital projects, which are usually planned and construction without consideration of operations.

Recommendations for Developing an ITS Strategic Plan

- Make sure to develop a communications plan. This should include where to put fiber in the City, but also who will be able to use the fiber and who will maintain it. The level of detail is recommended down to the buffer tube or fiber strand number level, to create a clear roadmap of fiber usage at the City and maintain departmental use and sharing for the future.
    - A good communication plan is one that considers needs of the whole City.
        - May need to include the Buckeye Water Department as part of this project.
    - It is critical to try and get all City departments in the room to talk about priorities – there should be opportunities to share fiber, but that requires planning to make sure there are enough fiber strands for all needs.
    - The communications plan should include a recommended fiber map – partner agencies now find that it would have been very helpful to have a fiber map to follow, rather than just putting it in wherever they could and ending up with a lot of fiber, but in a fragmented network.
    - Fiber is the ultimate goal for communications, but do not shy away from wireless at the beginning – try and get a wireless connection to all signals and devices until the City is able to get fiber.
    - Make sure roles and responsibilities are identified, including who is going to be on-call to fix fiber if it gets hit in the middle of the night, who will do splicing, and who will keep the network up to date. Examples:
        - *Glendale* – IT resides on transportation fiber and is separated by a firewall. Transportation maintains it everywhere outside of buildings and IT maintains everything inside buildings. This means that transportation is on-call to fix fiber issues after hours.
        - *MCDOT* – All ITS systems are completely separate from IT.
        - *Avondale* – All ITS systems are completely separate from IT, and they do all of their own server maintenance and upgrades (server room is in the TMC and not connected to any City Enterprise networks).
- Make sure there is a plan in place to track ITS assets as they are deployed. This is critical for making sure things like conduit are maintained properly, even if they are not used immediately.
    - Tracking assets is particularly important because the City of Buckeye is a growing community. While keeping track of infrastructure and maintenance activities is simple now, it is important to put into place processes and systems to track growth areas in order to manage it effectively as the City grows.
    - The City needs to have a complete database to track fiber/conduit and ITS devices, including location, install dates, maintenance calls, etc.
- Use the ITS Plan as a way to propose projects and justify their funding, both internally at the City and with other funding sources, such as the MAG TIP.
- Make sure the City is planning for things like incident/emergency management and special events as part of an ITS Plan.

APPENDIX A – PROJECT STAKEHOLDERS

Name	Agency	Department	Email	TAG	Stakeholder Group	Partner Group
City of Buckeye Internal Contacts						
Tammy Valadez Paz	Buckeye	Engineering	tvaladezpaz@buckeyeaz.gov	x	x	
Scott Zipprich	Buckeye	Engineering	szipprich@buckeyeaz.gov	x	x	
Scott Lowe	Buckeye	Public Works	slowe@buckeyeaz.gov	x	x	
Paul Robbins	Buckeye	Public Works	probbins@buckeyeaz.gov	x	x	
Greg Platacz	Buckeye	IT	gplatacz@buckeyeaz.gov	x	x	
Nolan Straabe	Buckeye	IT	nstraabe@buckeyeaz.gov	x	x	
Roger Klingler	Buckeye	City Manager's Office	rklingler@buckeyeaz.gov		x	
George Diaz	Buckeye	City Manager's Office	gdiaz@buckeyeaz.gov		x	
Annie DeChance	Buckeye	Communications	adechance@buckeyeaz.gov		x	
Robert Wisener	Buckeye	Parks/Community Development	rwisener@buckeyeaz.gov		x	
Terri Hogan	Buckeye	Planning	thogan@buckeyeaz.gov		x	
Anthony Renaud	Buckeye	IT/GIS	arenaud@buckeyeaz.gov		x	
Tanya Duncan	Buckeye	IT/GIS	tduncan@buckeyeaz.gov		x	
Luis Aguilar	Buckeye	Public Works	laguilar@buckeyeaz.gov		x	
Jose Heredia	Buckeye	Public Works	jheredia@buckeyeaz.gov		x	
Bob Costello	Buckeye	Fire	bcostello@buckeyeaz.gov		x	
Nate Ryan	Buckeye	Fire	nryan@buckeyeaz.gov		x	
Larry Hall	Buckeye	Police	lhall@buckeyeaz.gov		x	
Charles Arlak	Buckeye	Police	carlak@buckeyeaz.gov		x	
Tennille Hiller	Buckeye	Economic Development	thiller@buckeyeaz.gov		x	
External/Partner Agency Contacts						
Micah Henry	MAG	ITS & Safety	mhenry@azmag.gov	x		x
Ryan Gish	MAG	IT/RCN	rgish@azmag.gov	x		x
Andrew Cannata	MAG	IT/RCN	acannata@azmag.gov	x		x
Margaret Boone	MAG	Safety	mboone@azmag.gov	x		x
Faisal Saleem	MCDOT	ITS	faisalsaleem@mail.maricopa.gov	x		x
Steve Ramsey	ADOT	TOC	sramsey@azdot.gov	x		x
Luke Albert	Goodyear	Engineering	luke.albert@goodyearaz.gov	x		x
Albert Garcia	Surprise	Engineering	albert.garcia@surpriseaz.gov			x
Allan Galicia	Glendale	Engineering	agalicia@glendaleaz.com			x
Chris Hamilton	Avondale	Engineering	chamilton@avondale.org			x
Ed Stillings	FHWA	Planning	ed.stillings@dot.gov			x

APPENDIX B – CITY STAKEHOLDER WORKSHOP ATTENDEES

Buckeye ITS Strategic Plan City Stakeholder Workshop

Thursday March 16, 2017; 12:30-3:30pm

Buckeye City Hall Executive Conference Room

Attendees:

Tammy Valadez Paz – Buckeye Engineering (City Project Manager)

Tanya Duncan – Buckeye Engineering GIS

Paul Robbins – Buckeye Public Works

Scott Lowe – Buckeye Public Works

Robert Wisener – Buckeye Community Services

Annie DeChance – Buckeye Communications

Gary McGeough – Buckeye Police

Charles Arlak – Buckeye Police

Greg Platacz – Buckeye Information Technology

Nolan Strabbe – Buckeye Information Technology

Bob Costello – Buckeye Fire

Nate Ryan – Buckeye Fire

Micah Henry – MAG (MAG Project Manager)

Margaret Boone – MAG

Ryan Gish - MAG

Andrew Cannata – MAG

APPENDIX C – CITY STAKEHOLDER WORKSHOP PRESENTATION

March 16, 2017

Task Order No. PL1601

2017 ITS STRATEGIC PLAN for the City of Buckeye

MARICOPA ASSOCIATION of GOVERNMENTS

Kimley»Horn
Expect More. Experience Better.

Stakeholder Workshop #1

Welcome!

AGENDA

- Facilitator and Participant Introductions
- Introduction to the Buckeye ITS Strategic Plan
- What is ITS?
- Overview of ITS Planning and Examples
- Virtual Tours
- Discussion on Buckeye ITS Program
- Next Steps

Introductions

- Name
- Department you work in and your role
- What do you know about intelligent transportation systems (ITS)

What is the Buckeye ITS Strategic Plan?

Buckeye ITS Strategic Plan

- Data Collection
- Transportation Systems Operations and Management Plan
- Needs and Strategy Development
- Funding
- Implementation
- Final Plan – October 2017

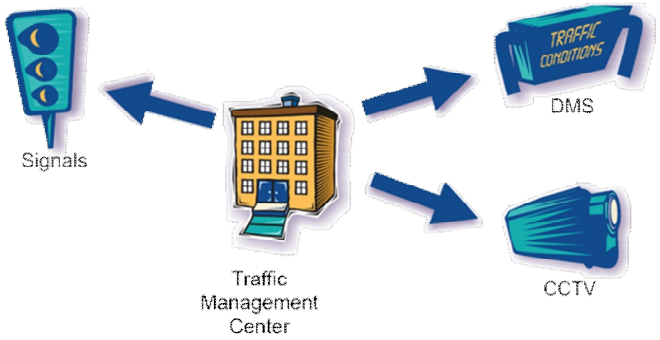
What is ITS?

What are Intelligent Transportation Systems (ITS)?

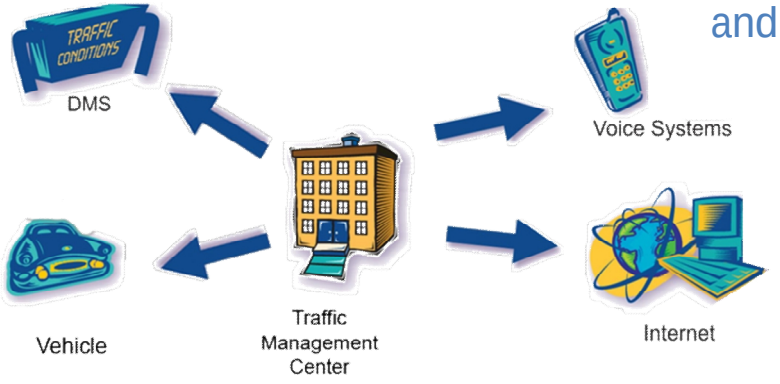
ITS is an acronym that stands for *Intelligent Transportation Systems*

Purpose of ITS:
Manage traffic and provide real-time condition information through technology with the highest level of safety and efficiency possible —consistently delivering better traffic management and better traveler information.

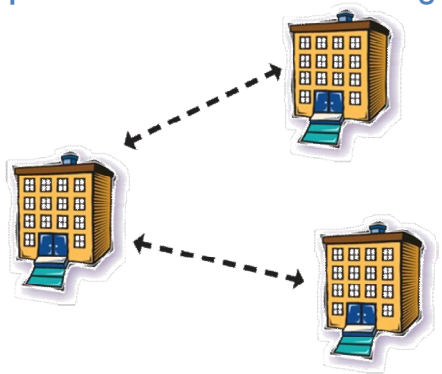
Managing Infrastructure



Sharing Information With Traveling Public,



and with Other Departments and Other Agencies



Typical Uses of ITS

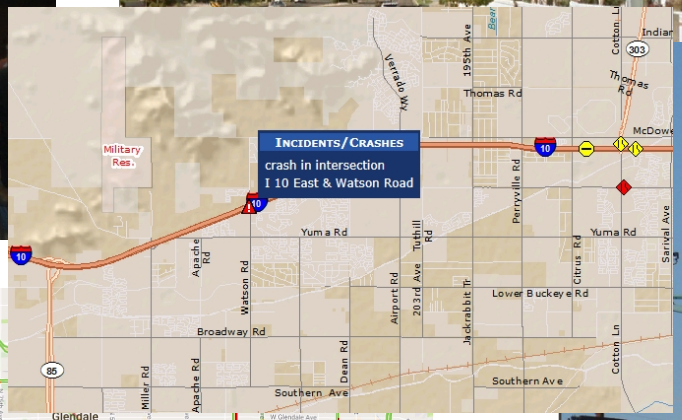
- Monitoring traffic on corridors and at key intersections
- Collecting and disseminating real-time information internally (to other departments) and externally (to other agencies and the public)
- Using central systems to manage operations and measure effectiveness of an ITS program
- ITS can impact all functions of the City – if we plan appropriately

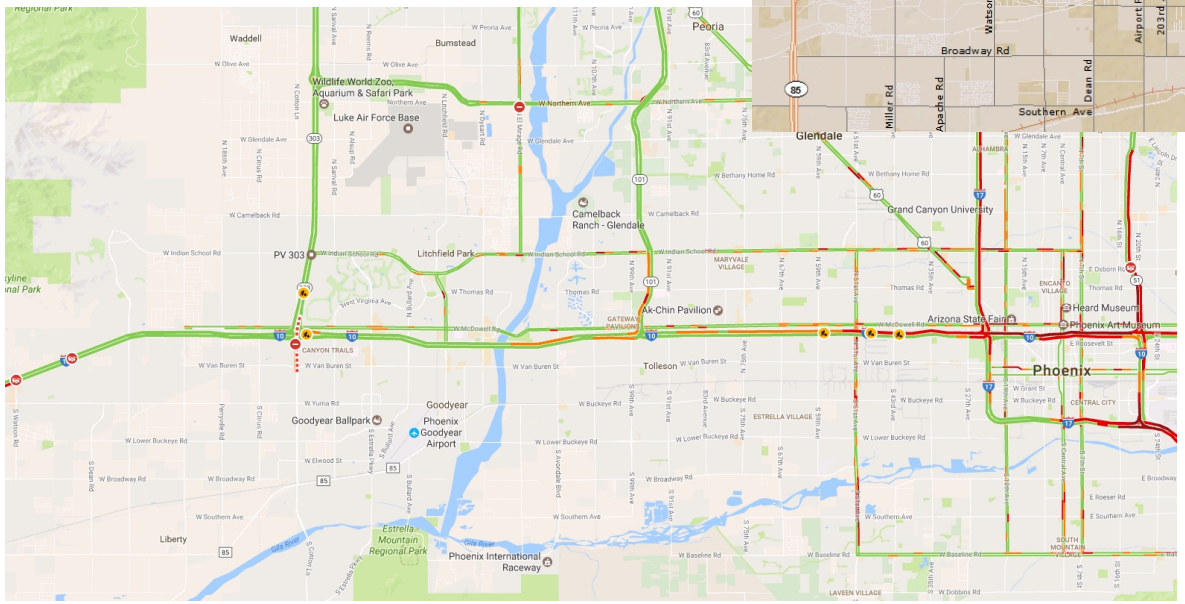
2017 ITS STRATEGIC PLAN for the City of Buckeye

MARICOPA ASSOCIATION of GOVERNMENTS

Task Order No. PL1601

Kimley»Horn



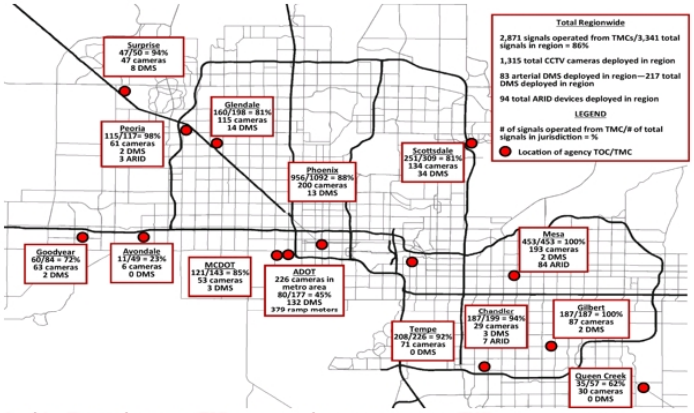


Briefing Document

2017 ITS STRATEGIC PLAN for the City of Buckeye Task Order No. PL1601 Kimley»Horn

Current ITS Infrastructure in the MAG Region

Intelligent Transportation Systems (ITS) help facilitate the management of transportation networks more efficiently. ITS includes communications and other technologies that are integrated into the transportation network; examples of technologies used by agencies in the MAG region include traffic signals, closed-circuit television (CCTV) cameras, detectors, dynamic message signs (DMS), fiber communications and central management systems.



Arterial traffic operations centers (TOC) or **transportation management centers (TMC)** manage the arterial network in the region and the Arizona Department of Transportation (ADOT) TOC manages the freeways. TOCs/TMCs (dots on the map) are where agencies centrally manage and operate their arterial networks through ITS infrastructure that have communications connections back to a central system. The ADOT TOC is the only fully-operational 24/7 TOC in the region; although some local agencies provide on-call staffing if necessary.

Traffic signals are generally monitored, controlled, and operated from the agency TOC/TMC, and almost 90% are connected with their TOC/TMC in the MAG region. Some agencies operate traffic signals that are owned by another agency such as with freeway interchanges where signals are owned by ADOT and operated by the local agency.

Detection is used at traffic signals and mid-block locations to detect traffic conditions. Video image detection (VID) and in-pavement detection are the most common types of detection used. Agencies also have radar detection, microwave detection, and infrared detection. Most East Valley cities have Anonymous Re-Identification (ARID) detection for use in travel time data collection for real-time operations management that anticipated to be adopted by more agencies region wide.

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Demonstration of the RCN

How ITS can Benefit Buckeye

- Safety
  - Use cameras at intersections to facilitate faster identification of incidents (do not need to wait for someone to call) and response to incidents (can tell what equipment is needed to respond appropriately)
  - Provide information to travelers in real-time to warn them of hazards within the City as well as on partner agency networks

How ITS can Benefit Buckeye

- Efficiency
  - Update and coordinate signal timing to reduce amount of delay to drivers
  - Change timing plans during events instead of manually operating traffic signal
  - Provide information to travelers in real-time to warn them of congested or closed roads
  - Use cameras to promote earlier identification of traffic signal issues or other maintenance needs at or around intersections

10 Minute Break

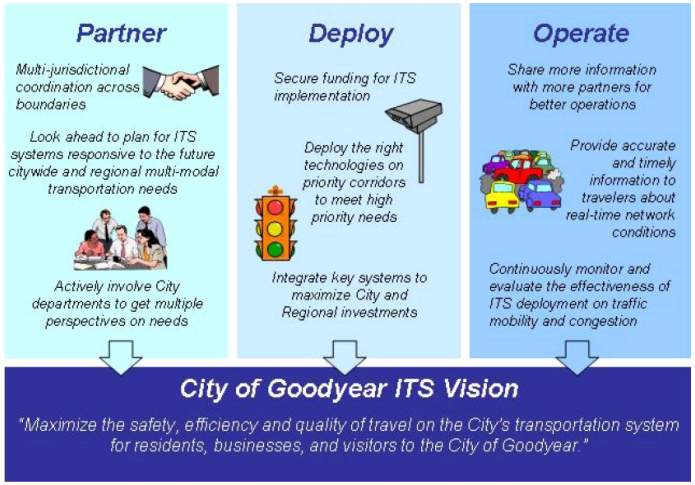
Overview of ITS Planning

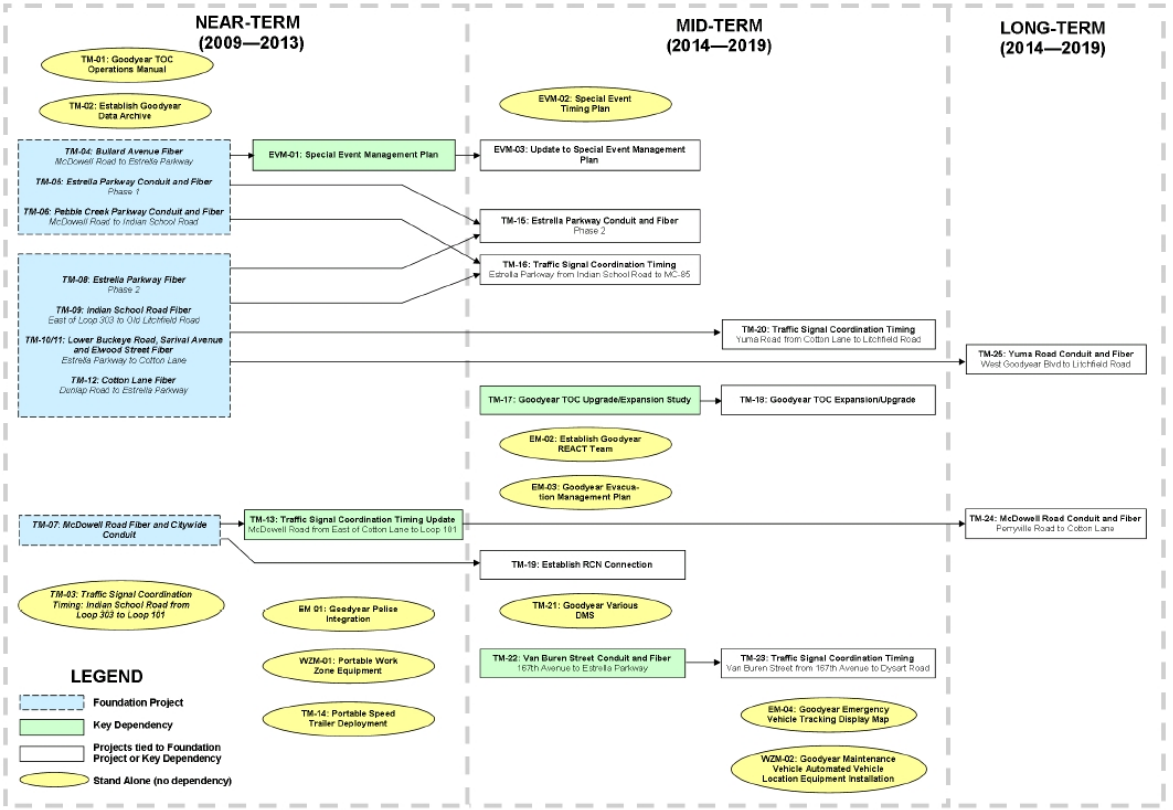
Regional ITS Planning

*More detail in your **Briefing Document***

- MAG Systems Management and Operations (SMO) Plan
  - Identifying regional priority corridors and TSMO strategies to be included in the RTP for funding
- MAG Transportation Improvement Program (TIP)
  - Annual call for projects where projects are ranked and programmed for funding

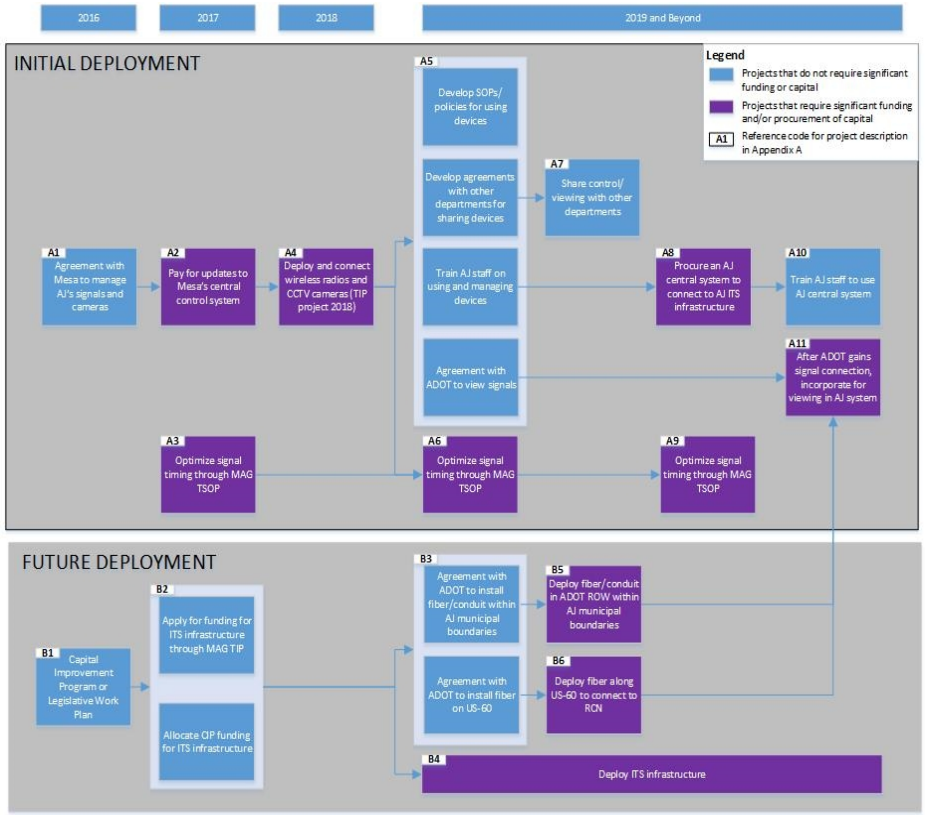
City of Goodyear ITS Strategic Plan

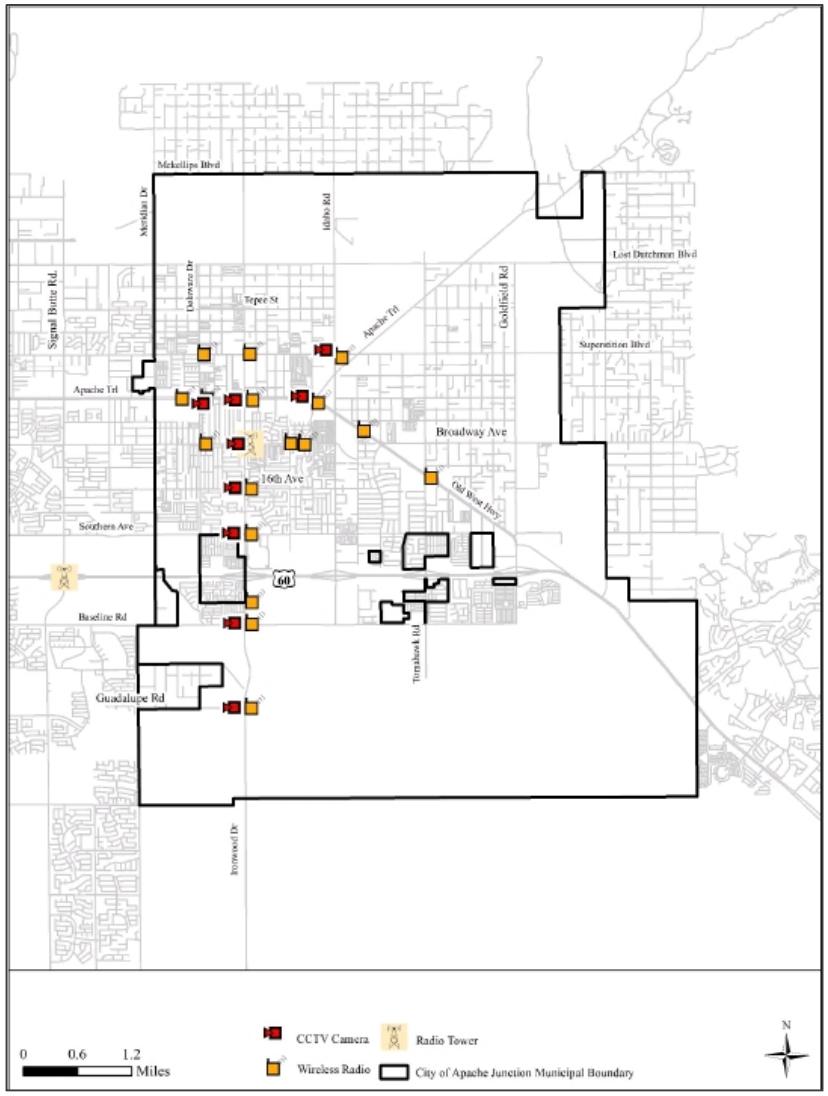




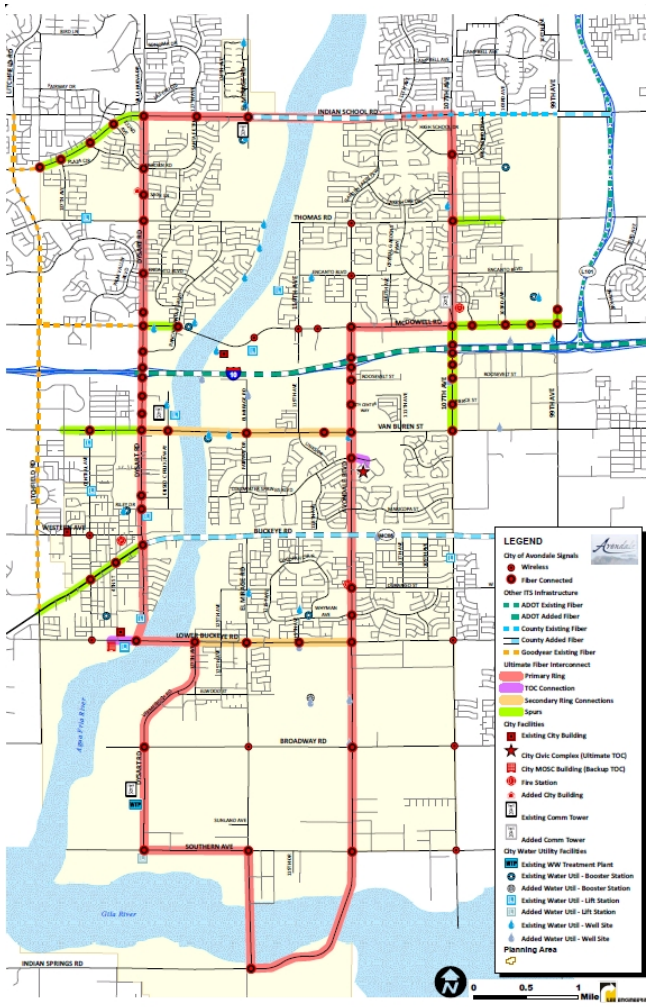
Sequencing of Deployment Projects

City of Apache Junction ITS Strategic Plan





City of Avondale ITS Strategic Plan



Ultimate ITS Communication Structure Figure ES-3

TABLE ES-4: ITS PROJECT IMPLEMENTATION SCHEDULE AND COST ESTIMATES

#	Project Type	ITS Need I.D.	Priority	Project Description	Capital Cost Estimate	Operations & Maint. Cost Estimate / Year	Implementation Year 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	TM-C	1 & 2	IHP-A	Introduce fiber optic communications primarily along Dysart Rd from Indian School Rd to Rancho Santa Fe Blvd + spur extensions along McDowell and Indian School Road (west).	$ 342,998	$ 1,481																				
2	TM-C	1 & 2	IHP-B	Establish a hard-line fiber optic connection between Project #1 and Dysart Road signals between I-10 and Van Buren Street and the City's communication tower on Eliseo C. Felix Jr. Way + spur extension of fiber optic along Van Buren St west to Central Ave	$ 82,040	$ 664																				
3	TM-C	2	IMP	Introduce fiber optic communications along Dysart Road from Van Buren St to Lower Buckeye Rd and the Interim TOC at the MOSC Building	$ 305,278	$ 901																				
4	TM-C	1 & 2	ILP	Install fiber optic lines within existing conduit in various locations throughout the City. If installation is in isolated portion of the overall network, then wireless communication equipment to be installed at "gateway" point.	$ 148,649	$ 1,323																				
5	TM-C	n/a	Planned	Introduce fiber optic communications primarily along McDowell Road from Avondale Blvd to 99th Ave.	$ 294,863	$ 850																				
6	TM-C	1 & 2	LTHP	Based on the guidance from Figure 3-4, implement fiber optic communications with the planned traffic signals along 107th Ave south of I-10. (wireless communication will be needed in interim)	$ 191,700	$ 400				wireless	comm.															
7	TM-C	2	LTHP	Establish fiber optic communications along Van Buren Street from the Project #2 terminus east to planned/implemented fiber communications along Avondale Blvd	$ 349,218	$ 1,050																				
8	TM-C	1 & 2	LTHP	Extend fiber optic communications farther south on Avondale Blvd from the Project#4 terminus at MC-85 to Lower Buckeye Rd	$ 187,700	$ 400																				
9	TM-C	2	LTHP	Implement fiber optic communications along Lower Buckeye Rd to establish connection between Interim TOC and Avondale Blvd (at terminus to Project #6). If traffic signals planned along Lower Buckeye occur before this project, then wireless communication equipment will be needed.	$ 414,733	$ 1,233				wireless	comm.															
10	TM-C	2	LTMP	As opportunities in funding, development associations, and other agency activity presents itself, introduce sections of the overall communication ring structure per Figure 4-1.	Fiber installation: ~$190k / mi in new ~$30k / mi in ex. conduit O&M: $400/mi/yr																					
11	TM-TO	3	LTMP	Introduce CCTV cameras to new traffic signal locations based on factors such as traffic demand, crash history, critical location.	$10,000 / location	$ 1,000																				
12	TM-TI	10	LTMP	Dynamic message sign installations should be placed at key locations for controlling event-related traffic or in conjunction with available alternate routes in proximity to heavily congested areas.	$50,000 / location	$ 6,000																				
13	TM-TO	8 & 23	LTMP	Introduce permanent data collection stations at locations throughout the City based on past and future data concerning traffic demand, crash locations, route decision points, etc. Must be part of established communication network so collected data can be reviewed/archived.	$10,000 / location	$ 1,000																				
14	EM	18	LTMP	Equipment at traffic signals or via data collection stations (Project #13) to be used to interpret possible incident occurrences.	$50,000 / query system	$ 5,000																				
15	IM	22	LTMP	Participate in interagency sharing of traffic signal related parameters and other traffic/ITS data being collected via other devices. Coordinate with establishment of the RCN and City's ultimate TOC.	$ 50,000	$ 15,000																				
16+	various	remaining	LTMP/LP	Remaining ITS needs (per report listings) to be addressed in various projects implemented throughout the remainder of the 20-year plan, based on future determination of needs and funding sources.	$ -	$ -																				

Creating a Successful Buckeye Plan

- Align ITS objectives with other City priorities
  - From the current General Plan effort:
    - What are the Top 3 Community Priorities:
      - Vibrant sustainable Economy
      - Community that is Safe and Well-Prepared
      - Mobility and Connectivity
    - City's biggest assets
      - Transportation corridors
      - Natural environment

Creating a Successful Buckeye Plan

- Highlight the role of ITS in City vision, goals and objectives
  - From the current General Plan effort:
    - Vision – "Buckeye in 2040 is an **innovative**, visionary and **forward-thinking** community that is **safe** and secure with diverse employment, housing, education and **business opportunities**. Buckeye offers rural to urban lifestyles with a genuine sense of heritage while being good stewards of our natural resources, open spaces and overall **quality of life**."

Innovative and Forward-Thinking

- Connected/Autonomous Vehicles
  - Autonomous ("driverless") vehicles are being tested in Arizona by Uber, Google and others
  - Timeline?
  - What will the City be required to do?
  - How to integrate in your City?

Example ITS Applications

Real World Examples of ITS

- Accident at intersection
- Freeway closure
- Special event

Virtual Tour of the Surprise and MCDOT TMCs

ITS In Buckeye

- What should ITS do for Buckeye?
  - Traffic signal coordination?
  - Monitoring of intersections?
  - Traveler information?
  - Share information with other agencies?
  - Others?

Supporting the Buckeye ITS Program

- How can an ITS Program be supported by the City?
  - Partnering between departments
    - PSEP coordination
    - Sharing operations and management functions
    - Setting requirements for developers
    - Engineering to include ITS in design of future projects
  - Identifying funding (if needed)
    - City Capital Improvement Plan (CIP)
    - Leveraging regional funding opportunities

Next Steps

- Partner Agency Workshop
  - Monday March 20, 2017
    - 9:30-11am
    - Executive Conference Room (this room!)
- TSMO Plan Workshop (Workshop #2)
  - May/June 2017
- Draft ITS Strategic Plan
  - September 2017

Contacts

Project Management Team

Tammy Valadez Paz
City of Buckeye Project Manager
tvaladezpaz@buckeyeaz.gov

Micah Henry
MAG Project Manager
mhenry@azmag.gov

Consultant Team

Deanna Haase
Kimley-Horn Project Manager
deanna.haase@kimley-horn.com

Amy Garinger
Kimley-Horn Team Lead
amy.garinger@kimley-horn.com

APPENDIX D – ITS BRIEFING DOCUMENT

Partnerships to Support ITS Planning and Operations

There are local and regional groups and partnerships that currently exist and can support ITS and transportation operations at various levels. Having City participation in these partnerships is recommended as it will provide the City with the regional perspectives related to ITS and operations, keep the City appraised and well positioned for funding opportunities, and foster relationships with other agencies in the region in terms of sharing insights as well as possibility partnering on ITS infrastructure and system deployment and operation.

City of Buckeye Public Safety Executive Partnership (PSEP)

The City of Buckeye PSEP is a partnership between the City Fire, Police, and Public Works Departments with the mission of providing an "integrated and comprehensive response to the public safety and service needs of the City." The PSEP meets bi-monthly to discuss public safety items and programs in the City and facilitate effective communication and collaboration between first responders in the City, including Police, Fire, and Public Works. This helps facilitate a unified and seamless response to emergency situations. Activities involve joint planning and training exercises related to emergency response as well as awareness and prevention. PSEP programs that have been implemented include the School and Town Emergency Operations Programs, the Community Emergency Response Team (CERT), the Palo Verde Nuclear Power Plan Liaison, and joint efforts to obtain necessary funds, including grants, to support the programs.

MAG ITS Committee

The MAG ITS Committee is a formal technical committee that consists of representatives from Federal Highway Administration (FHWA), ADOT, Arizona Department of Public Safety (DPS), Valley Metro, Arizona State University and sixteen MAG member agencies. The committee provides oversight to the development of regional plans, such as the ITS Strategic Plan, and studies to support ITS infrastructure planning. These plans serve as the roadmap for investments in regional ITS infrastructure and in the application of technology-based solutions for managing and operating the regional transportation system. The committee also recommends ITS applications on the arterial and freeway systems through projects that are programmed in the Transportation Improvement Program (TIP).

MAG RCN Working Group

The Regional Community Network (RCN) is a network of fiber and communications infrastructure that links agencies to one another to support camera image and other data sharing for traffic operations purposes. RCN has been in existence since 2001 when the initial RCN Feasibility Study was developed. The MAG RCN Working Group was established to provide general oversight to the RCN Program activities and manage the future expansion and changes to the network. Changes to the network are discussed by the agencies involved in the MAG RCN Working Group. This MAG RCN Working Group is comprised of staff from MAG member agencies to make recommendations for the RCN Program moving forward.

AZTech Partnership

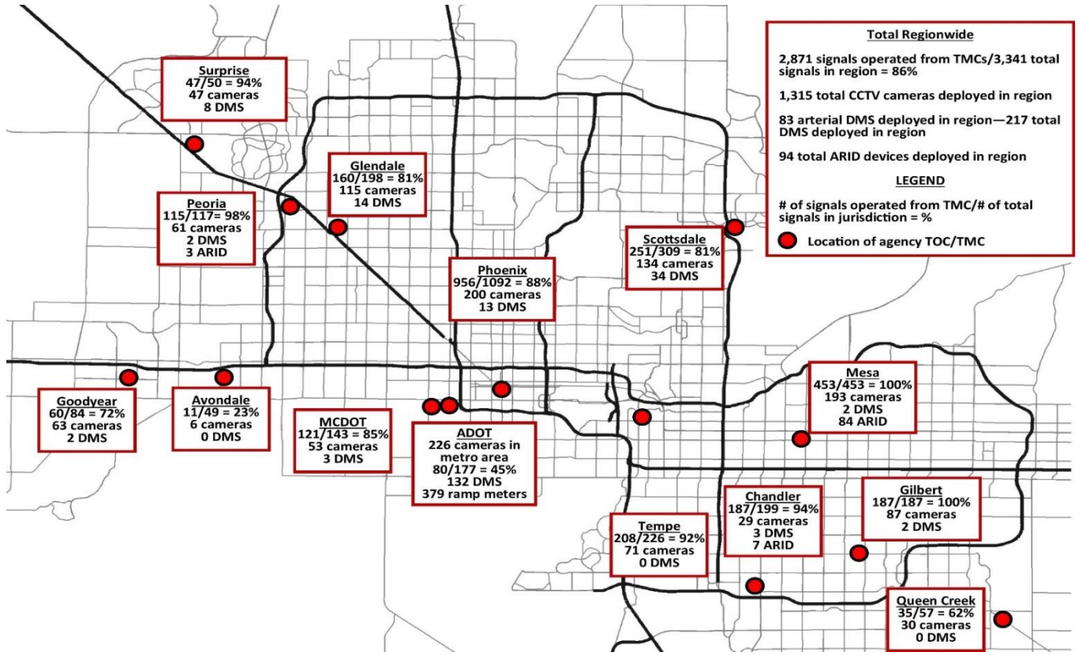
AZTech is a regional traffic management and operations partnership in the Phoenix metropolitan area that includes all major governmental transportation agencies in the region, along with public safety agencies and several private technology and media companies. The partnership, led by ADOT and Maricopa County Department of Transportation (MCDOT), guides the application of ITS technologies for managing regional traffic. The goal is to achieve more efficient mobility, less congestion, and a higher level of safety for travelers throughout the metropolitan area. The AZTech Operations Committee (AOC) is comprised of traffic management specialists from the public agency members of AZTech. This group coordinates and attains consensus on traffic operations and management issues that span agency boundaries such as cross-jurisdictional signal timing, emergency response activities, and the funding, installation, operation, and maintenance of ITS equipment for regional benefit.

For more information on this document or on the Buckeye ITS Strategic Plan, please contact:

Tammy Valadez Paz, City of Buckeye Project Manager; tvaladezpaz@buckeyeaz.gov
Micah Henry, Maricopa Association of Governments Project Manager; mhenry@azmag.gov
Deanna Haase, Kimley-Horn Project Manager; deanna.haase@kimley-horn.com

Current ITS Infrastructure in the MAG Region

Intelligent Transportation Systems (ITS) help facilitate the management of transportation networks more efficiently. ITS includes communications and other technologies that are integrated into the transportation network; examples of technologies used by agencies in the MAG region include traffic signals, closed-circuit television (CCTV) cameras, detectors, dynamic message signs (DMS), fiber communications and central management systems.



Arterial traffic operations centers (TOC) or **transportation management centers (TMC)** manage the arterial network in the region and the Arizona Department of Transportation (ADOT) TOC manages the freeways. TOCs/TMCs (dots on the map) are where agencies centrally manage and operate their arterial networks through ITS infrastructure that have communications connections back to a central system. The ADOT TOC is the only fully-operational 24/7 TOC in the region; although some local agencies provide on-call staffing if necessary.

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ITS Planning in the MAG Region

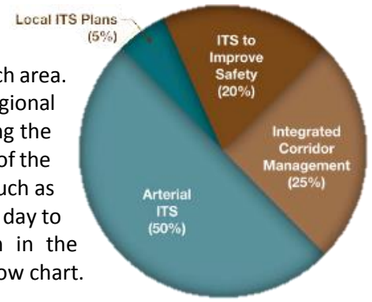
ITS planning is occurring at the state, regional and local level. Some examples and highlights are found in this section.

MAG Systems Management and Operations (SMO) Plan (in progress)

MAG and the partner agencies within the region are in the processes of developing the SMO Plan to help guide the region in making strategic investments not just in ITS infrastructure and technology but also in the non-infrastructure resources essential for the efficient operation and management of the regional transportation system. The SMO Plan will identify priority corridors for ITS infrastructure investments as well as key SMO programs and strategies that should be implemented and supported to improved regional transportation operations and address critical emerging technologies.

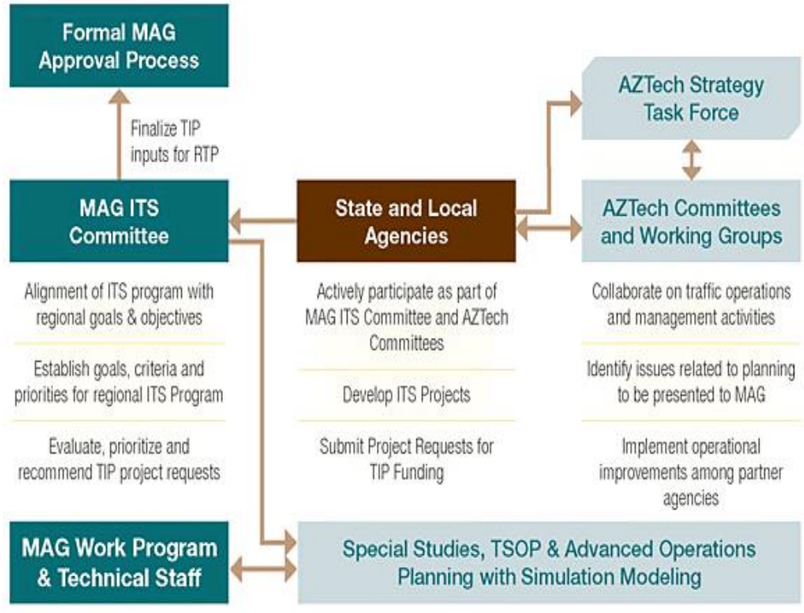
MAG ITS Strategic Plan (2012)

This update to the ITS Strategic Plan charts a strategic course for future ITS investments by identifying emphasis/focus areas and resource allocation goals for each area. The pie chart depicts the regional investment strategy to help direction regional investments in ITS infrastructure. The ITS Strategic Plan recognized that implementing the Plan is a collective effort among all agencies in the MAG region. However, realization of the full benefits from improved traffic operations that utilizes ITS depends on agencies such as ADOT (for freeways), Maricopa County and local agencies (for arterials) that perform day to day operations. There is a specific relationship between regional collaboration in the development of ITS projects for regional funding that is summarized in the graphic flow chart.



ITS Planning Guidelines for Smaller Jurisdictions (2012)

This document serves as a guideline and a template that can be readily utilized by staff at a smaller jurisdiction in the MAG region to plan and implement ITS infrastructure. Smaller jurisdictions have the opportunity to take early steps to help make sure they build safe and efficient transportation systems to serve their jurisdictions well into the future. Making ITS an integral part of the jurisdiction's infrastructure plan would be such a step. The document describes an abbreviated version of the process typically followed when developing an ITS Strategic Plan, and addresses a growing need for technical guidance at many of the smaller jurisdictions in the region.



Local Agency ITS Planning

In addition to ITS Planning at the regional level, many local agencies have developed ITS plans, in the form of ITS Strategic Plans, Master Plans or Deployment Plans, that they use to help guide their ITS Program and ITS investments.

- City of Apache Junction
- City of Avondale
- City of Glendale
- City of Goodyear
- City of Mesa
- City of Peoria
- City of Phoenix
- City of Scottsdale
- City of Surprise (starting in March 2017)
- City of Tempe
- Maricopa County

APPENDIX E – PARTNER WORKSHOP ATTENDEES

Buckeye ITS Strategic Plan Partner Agency Workshop

Monday March 20, 2017; 9:30 -11:00am

Buckeye City Hall Executive Conference Room

Attendees:

Partner Agency Representatives

Albert Garcia – City of Surprise;
albert.garcia@surpriseaz.gov

Chris Hamilton – City of Avondale;
chamilton@avondale.org

Faisal Saleem – Maricopa County DOT;
faisalsaleem@mail.maricopa.gov

Allan Galicia – City of Glendale;
agalicia@glendaleaz.com

Ed Stillings – FHWA;
ed.stillings@dot.gov

Steve Ramsey – ADOT;
sramsey@azdot.gov

Micah Henry – MAG;
mhenry@azmag.gov

Margaret Boone – MAG;
mboone@azmag.gov

Ryan Gish – MAG;
rgish@azmag.gov

City of Buckeye Stakeholders

Scott Lowe – Public Works

Paul Robbins – Public Works

Roger Olsen – Engineering

Dave Walder – Information Technology

Nolan Strabbe – Information Technology

Greg Platacz – Information Technology

Anthony (Tony) Renaud – Information Technology/GIS

Charles Arlak – Police